Site History
Due to citizen's complaints received by Arkansas Department of Environmental Quality (ADEQ) and Arkansas Department of Health (ADH), during a phone call on September 19, 2018, the State of Arkansas requested EPA assistance in determining if any hazards were involved with an underground fire at the Brown Tree Care Site in Bella Vista, AR (Brown Tree Care Site). The site is the location of a stump dump where stumps, vegetation and possibly other materials have been dumped in the past.

The site is listed as 4.74 acres, Parcel number 16-77998-007, owned by Cletus and Karena Wilkins. The property is surrounded by residential properties to the north, east, south, and west amongst trees and rolling topography. A commercial storage facility, Blue Mountain Storage, is located directly south of the property. The approximate geographic coordinates are Latitude 36.461346° North and Longitude 94.209098° West. The site is located on the 8000 block Trafalgar Rd, Benton County, Arkansas.

EPA Activities
Starting around August 1, 2018, the State began receiving calls from citizens in the area regarding the odor and the smoke coming from the site. In mid-September, EPA was asked to sample the air at the site and the surrounding area.

EPA initially mobilized to the site on October 1, 2018 to collect 5 air samples for semi-volatile organic compounds (SVOCs) (i.e. naphthalene) and volatile organic compounds (VOCs) (i.e. benzene). One sample was collected on-site, three were collected in areas downwind of the site and an additional background sample was collected. The initial results for VOCs were all below their respective screening levels. The SVOC samples were unable to be analyzed due to sampling media issues.

Based on conversations with the State of Arkansas, EPA remobilized to the site on November 10, 2018 for a re-sampling effort. Due to a wind direction shift, different sites were sampled in addition to the on-site location. Once again five samples were collected with one on-site, three downwind and one background area sampled. Sample results showed the on-site sample location typically had the highest concentration of SVOCs and VOCs, while the other sample locations (downwind and background) had similar, lower levels of SVOCs and VOCs.

All SVOCs and VOCs were below their respective screening level except for benzene which was detected at the on-site location exceeding the non-cancer screening level. Off-site, benzene doesn't appear to present an unacceptable health risk. EPA presented these findings to the ADEQ, ADH and EPA Air Enforcement.

EPA mobilized to the site on December 10, 2018, for 3 days of sampling for VOCs and monitoring for particulate matter (PM). The final results for this round of sampling will be available December 21, 2018.

Options/Recommendations

A technical expert from the Office of Research and Development (ORD) has provided the following preferred options to extinguish the underground fire quickly and with the lowest possible environmental and public health consequences.

Three Categories

1) Insertion of inert gas into Stump Dump
    a. Description - An injection of inert gas would choke off the oxygen that is being supplied to the fire and as a result the put out the fire.
    b. Issues - While this may work in theory, in practice it seems to be a challenge as the facility has stumps in it that create voids; as well as concrete and asphalt that are rather hard to drill. Municipal solid waste landfills are softer, so one can use a 32 inch auger and drill through the landfill. Here there are stumps, concrete, and asphalt therefore difficult to drill through those with a regular auger. Plus, there is a limited sphere of influence with an inert gas injection. The one location that we are aware of that used liquid nitrogen, worked for a short duration but the effectiveness went away after a while.
    c. Overall - Inert gas works in practice, but it is doubtful that at this site, the fire would be able to be controlled. The economics of putting a fire out of this size with an inert gas injection is something that has not been researched before and assumptions are it would be costly specifically with the drilling and getting the gas into the waste mass.

2) Chemical treatment
    a. Description – The application of foams or chemicals to suppress or stop the fire.
    b. Issue - There is an issue with using foams and chemicals in a watershed to a recreational lake. The fear would be that the behavior of these chemicals in this environment are unknown. The type of chemicals or foams are unknown, and the fear would be that those chemicals would make it into the waterways and then into the lake and cause another problem.
    c. Overall - The unintended consequences of using these compounds may be an issue and in the long term this is not an effective way of putting out the fire.

3) Excavation and Douse
    a. Description - Excavation and dousing is possibly one way of going at putting the fire out at the site. While the perimeter of the site is inaccessible now, potentially putting a 20 to 25 feet fire break around the site would allow trucks and excavator and water trucks to go down there to excavate the site. The excavator would pull out the pieces of wood or other debris from the site and if there's a fire that erupted or flared the water truck could be used to put that fire out.
    b. Issues - The positive of this approach is that it has been used at other landfill sites in Ohio. These are not tree stump sites but are municipal solid waste sites. The negative of such an approach is that the odor and smoke will get worse before they get better. The local citizenry would have to be contacted and made aware of such a move prior to making it so that they can take appropriate cautions.

c. Overall - Winter-time probably would be better to do this than summer because people are mainly indoors in winter and as a result there are less exposed to the smoke. It is a costly approach but it is an approach that has been utilized before successfully.